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8.—CONTRIBUTIONES FLORAE AUSTRALIAE OCCIDENTALIS
No. VIII.

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INTRODUCTION.

In this paper, which contains a few species from recent collections, I have adopted the practice of describing in the English language in preference to the previous practice of describing in Latin, which is the usual procedure, excepting in those cases where a brief diagnosis is made in Latin, followed by a description in English. The reason for this is that many authors still continue to describe in English, and that a diagnosis can be made more accurate as to details when described in English, than is the case with Latin. Contribution VI. contained descriptions in both languages in order to facilitate their use amongst local botanists, and although this was not repeated in Contribution No. VII., the English explanation considered necessary to complete the diagnosis rendered the subject matter more lengthy than is compatible with the present cost of printing. It is hoped that these diagnoses will be found acceptable to botanists generally.

The Type specimens are preserved in the State Herbarium of Western Australia.

PROTEACEAE.

Diploptera, *Gardn. gen. nov.

Flowers hermaphrodite, \pm regular. Perianth globose at the base, constricted upwards in a cylindrical tube, the limb globular, straight or slightly oblique, divided to the base into 4 segments which become regularly revolute in the expanded flower. Anthers all perfect, sessile in the bases of the concave laminae of the perianth-limb, the cells oblong, widely separated at the base and converging at the apices, opening in longitudinal slits; connective broad, ovate-triangular, not produced beyond the anther-cells, or very slightly so. Hypogynous scales or gland absent. Ovary on a long thick stipes, 1-celled, with one ovule pendulous from the summit on a slender and slightly flexuose funicle; style as long as the perianth-segments, rather thick, slightly curved, with a large peltate orbicular lateral stigmatic disc bearing a small linear stigma in the concave centre. Fruit a follicle, opening longitudinally along the ventral edge, liberating the seed together with two wing-like envelopes (the endocarp and mesocarp?) which closely en-

* *διπλοος, πτερω*—double-winged, in allusion to the two wing-like envelopes which embrace the seed and its funicle.

velop the seed, together with its long funicle, and are closely appressed over the seed. The outer envelope is open along its outer margin, and free from the inner except at the extremity; the inner envelope embraces the seed from which it is entirely free, but its two surfaces are adherent above and below the seed and on the dorsal margin, being free on the ventral margin. Seed ovate-oblong in outline, compressed, suspended on a long pendulous funicle; testa coriaceous; cotyledons obovate-oblong, unequal and semi-imbricate; embryo minute.

The new genus, which belongs to the *Grevilloideae-Grevilleae*, differs from all other Australian follicular Proteaceae in the solitary ovule. It is closest related to *Roupala* and *Lambertia*, but differs from both in the absence of hypogynous scales, inflorescence and fruit, and also in the leaves as well as in the solitary ovule and seed. Drummond first collected this plant (5th Coll. suppl. No. 15) probably from the district in which it is now known to occur. Mueller appears to have first named the plant, but did not publish a description. Bentham, who examined the specimen, placed it tentatively in the genus *Hakea* as ? *Hakea stenocarpoides* (F.v.M.) Benth. Bentham's reference to the two collateral ovules must refer to the comparatively large cotyledons, since I can find no trace of a second ovule, and the attachment is certainly apical. The curious structures which come away with the seed, and which I have described as "envelopes" for want of a better term, bear no similarity to those of any other Proteaceae known to me. The "plates" found between the seeds in *Banksia* are stated by Bentham to be the consolidated outer integuments of the inner surfaces of the two seeds. The seed of *Diploptera* has two complete integuments, and since the structures envelop the seed and funicle they are perhaps best regarded as parts of the fruit—the endocarp and mesocarp.

Diploptera stenocarpoides (Benth.) Gardn. n. sp. (?*Hakea stenocarpoides*, (F.v.M.) Benth.)

An erect shrub of 3-4 feet, branching from the base, the branches erect and virgate, with a few \pm erect branchlets, quite glabrous, and sometimes the younger branchlets glaucous. Leaves alternate, oblong-spathulate, gradually narrowed towards the base into a petiole, obtuse and mucronate, the mucro being sometimes almost pungent, indistinctly and obliquely nerved, flat, glabrous, and a dull green in colour.

Flowers in axillary umbels, peduncles reflexed, tri-bracteate at the base, with often a smaller bract close above, the bracts small and subulate. Peduncles dilated into a small narrowly-winged expansion immediately below the insertion of the pedicels, but continuing beyond them as a short stalk with a terminal cone-shaped structure. Pedicels deflexed on the peduncles, thus bringing the flowers into an upright position, 4-8 in each umbel. Perianth glabrous, erect, the limb smaller than the globose base, the constricted portion \pm straight and narrow, the segments not revolute until the flower expands; torus small, straight. Ovary on a long thick stipes which is somewhat bulbous at the base; style attaining the length of the perianth-segments, rather thick.

Fruit narrow, stipitate and fusiform, but \pm compressed, opening longitudinally along the ventral margin, acute and slightly beaked at the apex, gradually narrowed towards the base, scarcely woody. Outer seed-envelope

dark-coloured, oblong-lanceolate in outline and conspicuously margined, hyaline; inner envelope pale-coloured. Seed pale-coloured with a dark base, the funicle longer than the seed and somewhat flexuose.

South-Western Australia: Warren District, James Drummond (? 5th Coll.) Suppl. n. 15.

Walpole River, H. Steedman, Febry. 1931—The Type.

Between Deep River and Shannon River, in sandy gravelly soil on rises, Gardner, Jany. 1932.

***Grevillea tenuiloba*, Gardn. sp. nov.**

(Sect. *Plagiopoda*, Benth.)

A shrub of a few feet in height, the branches erect, shortly tomentose. Leaves simply pinnatisect, the segments 5-7, narrow-linear, pungently acute, convex above, doubly grooved underneath by the closely revolute margins, glabrous. Racemes many-flowered, rather dense, terminal, simple or forming small panicles, slender, the branches subtended by simple leaf-like bracts; bracteoles broad, loosely hairy and scarious, deciduous, rachis angular or sulcate, pubescent with short silky, \pm appressed hairs.

Pedicels slender, silky-pubescent. Perianth red, very sparingly pubescent outside in the lower part, the limb glabrous, glabrous inside, the tube not very broad at the base, but much attenuate and revolute under the obliquely globular limb; torus very oblique, almost vertical; hypogynous gland hippocrepiform. Ovary villous, almost sessile on the upper margin of the torus; style elongated, somewhat thick; stigmatic disc small, lateral, umbonate. Fruit not seen.

Avon district, near Dandaragan; W. E. Blackall, September, 1932.

Leaves 2-3cm. long, 1.7-2.0cm. broad, the segments 1.0-1.8cm. long, less than 1mm. broad; racemes 7-9cm. long; pedicels 4mm. long; perianth 1cm. long, the limb 2.5-3mm.; style and ovary 2.2cm. long.

The species belongs to the Sect. *Plagiopoda*, and is close to *G. erectiloba*, F.v.M., differing in the much smaller leaves and flowers, glabrous style, and almost sessile ovary. The perianth appears to be similar, but is shortly hairy outside in the lower portion, and perfectly glabrous within. The leaf-segments are flattened, not terete, and are rigidly divaricate.

***Grevillea dryandroides*, Gardn. sp. nov.**

(Sect. *Conogyne*, R.Br.)

A small tufted or diffuse shrub with a rather rough, almost corky bark at the base. Leaves erect, linear-oblong in outline, simply pinnatifid, with numerous (30-40) pairs of opposite approximate segments, the segments linear, rigid, entire, glabrous, with prominent midribs, smooth and slightly convex above, the margins thick and closely revolute, doubly grooved beneath from the revolute margins, and finely silky-pubescent with crisped hairs which are only visible when the leaf is sectioned; mucronate.

the perianth, except the style, is typical of *Dryandra*. The foliage is quite anomalous. All the mature involucre seen were damaged by insects, and in the absence of fruits no definite position can be assigned to the species. It is probable, however, that it occurs within the Section *Eudryandra*, series *Armatae*, next to *D. armata*.

RUTACEAE.

Muiria, Gardn. gen. nov.

Calyx small; sepals 5, imbricate; petals 5, imbricate, narrow, erect, disc small; stamens 10, equal in length to the petals, slender, flattened at the base, each with a tuft of silky hairs on the inner surface above the base; anthers ovate-ellipsoidal, versatile, the connective narrow, the cells placed back to back, opening longitudinally in parallel slits, obtuse, not apiculate. Carpels 5, almost distinct from the base; styles inserted about the middle and immediately united into one, slender; stigma capitate, shortly 5-lobed; ovules 2 in each carpel, superposed. Fruit not seen.

Shrub often very small, softly hirsute with long, fine almost cobwebby hairs. Leaves simple, alternate, hairy, but becoming glabrous with age, thick and not evidently glandular; inflorescence axillary, sometimes terminal; pedicels 1-3 in the axils of the upper leaves, subtended by lanceolate bracts. Flowers yellow.

This genus is established upon the species which Mueller named *Chorilaena Hassellii*. In describing the plant (Victorian Naturalist iii. 87 (1887)) Mueller pointed out that *Nematolepis* should be united with *Chorilaena*, but should the generic separation be kept up, the new plant might as well be placed in *Nematolepis*, the differences within the genus *Correa* as regards corolla being quite as great, whereas again diversity of inflorescence would, for the extended genus *Nematolepis*, not be greater than for *Lasiopetalum*. Mueller, however, united several genera of the Rutaceae under *Eriostemon*, a practice which has not been followed by later botanists. If *Muiria* were united with *Nematolepis*, it would logically follow that *Eriostemon* should be united with *Phebalium* as was done originally by Mueller. Bentham separated the two on the aestivation of the corolla and indumentum, characters which now separate *Nematolepis* and *Muiria*. The new genus, which appears to be closer to *Nematolepis* than to *Chorilaena*, differs from the former in the free and imbricate petals, and from the latter in the simple leaves, short stamens and the inflorescence

Muiria Hassellii, (F.v.M.) Gardn. sp. nov.

(*Chorilaena Hassellii*, F.v.M. Vict. Nat. iii. 87 (1887)).

(*Muiria montana*, Gardn. Ms. in Enum. pl. Austr. occ. 70 (1931)).

A dwarf shrub, 4 to 18 inches in height; leaves small, obovate-oblong to elliptical-oblong, narrowed towards the base, almost flat, sparsely hairy as well as the branchlets, but becoming glabrous with age. Flowers in the upper axils or terminal, pendulous on short recurved pedicels; bracteoles small, linear to ovate-elliptical near the base of the pedicels; sepals small, somewhat unequal, ovate to lanceolate-elliptical, hairy outside; petals large,

Flowers in short dense secund racemes, paniculately arranged on long naked prostrate branches, the rhachis pubescent with white appressed hairs. Pedicels very short; bracteoles lanceolate, concave, ciliate, acute, very deciduous. Perianth silky-pubescent outside, glabrous inside, the tube broad and almost gibbous at the base, but narrowed above the middle, revolute under the ovoid-globular limb; torus almost straight; gland semi-lunar or almost rhomboidal; ovary villous with dense white hairs, on a stipes which is slightly longer than the ovary; style long and slender, sparsely hairy with thin white hairs, terminating in a narrow somewhat striate cone with an oblique almost bulbous base.

Avon district near Ballidu, in yellow sandy loam on low heath, usually under taller shrubs, fl. m. September, C. A. Gardner, 2711. 22nd September, 1931.

Plant rarely exceeding 20cm. in height, spreading to a diameter of 1 metre or more. Leaves mostly 12cm. long, 1.8cm. wide, the segments up to 1.2cm. in length and 1.2mm. in width. Racemes 5-7cm. long; pedicels under 2mm. Perianth 5-6mm. long, the limb 1.2mm.; style 1.5cm.

The species belongs to the Sect. *Conogyne*, R. Br., but does not appear to be closely related to any described species of this Section. The floral structure and habit of the plant are much like that of *G. thyrsoides*, except that the stigma is distinctly narrow-conical. The leaves are also somewhat like those of *G. thyrsoides*, but longer, with much more numerous, approximate and shorter segments, and are not scabrous. Amongst the species of the *Conogyne*, it is perhaps best placed after *G. Purdieana*.

Dryandra petrophiloides, Gardn. sp. nov.

A small rigid shrub, the branches intricate, somewhat densely foliaged; glabrous except the flowers.

Leaves rigid, trichotomously divided or pinnate with dichotomous pinnae, the segments terete, rigid and pungent-pointed. Flower heads terminal on short leafy branchlets, surrounded by long floral leaves. Involucres narrow-ovoid, the outer bracts ovate-lanceolate, acute, the apex acuminate, glabrous, the margins ciliolate, the outermost bracts leafy, the peduncles scaly. Inner bracts linear, white-hairy towards and at the apex, with \pm appressed hairs, and villous at the broad base.

Perianth-tube slender, plumose-villous, the limb silky-hairy and bearded at the apex with long white straight hairs; style as long as the perianth, the stigmatic end somewhat thickened and usually broadened towards the base, fusiform and minutely hirsute below the brush-like stigma. Fruit not seen in a perfect state.

Shrub 30-60cm. high, and as much in diameter, leaves 4-5cm. long and as much in breadth, twice or thrice dichotomously or trichotomously-divided, the ultimate segments 5-10mm. long. Involucres about 2cm. long; perianths about 3.2cm. long.

Near Newdegate, in sandy gravelly soil, W. E. Blackall, Nov. 1931—The Type.

This plant has much the aspect of *Isopogon teretifolius* or *Petrophila rigida*, and might at first sight be easily mistaken for either of these species. The flowers, however, are surrounded by a narrow involucre of bracts, and

narrowly oblong-cuneate, glabrous except towards the summit, lemon-yellow with a dark median stripe, much imbricate; stamens about as long as the petals; filaments linear, provided above the base with a scale-like expansion bearing a tuft of hairs, otherwise glabrous; style elongated, capillary, glabrous; stigma small; carpels obtuse, densely hairy.

Shrub 8-35cm. high; leaves 1.2-1.5cm. long, 2-3mm. broad; pedicels about 2mm. long; bracteoles under 1mm.; sepals 3-4mm. long; petals 1.8-1.9cm. long.

On the Western side of the Stirling Range, A. Hassell.

Summit of Coyanarup, T. Muir and C. A. Gardner, 1440, 29th April, 1923.

Stirling Range near Mondurup, William Porteus, 27th June, 1930.

Summit of Isongorup, Muir and Gardner, October, 1930.

The genus is named out of compliment to Mr. Thomas Muir of War-rungup, Borden, who accompanied me on the two occasions when this plant was collected.

Asterolasia Dielsii, Gardn. sp. nov. (Sect. Urocarpus). (*A. Dielsii*, Gardn.

Ms. in Enum. pl. Austr. occ. 70 (1931).

A diffuse shrub of low stature usually with trailing branches, sometimes small and erect. Leaves alternate or clustered at some of the nodes, oblong-ovate, flat, the margins slightly recurved, very shortly stellate-hairy above when young, the hairs wearing away on the older leaves, leaving scurfy scales, sparsely and coarsely stellate-hairy beneath, the midrib prominent; petioles slender.

Flowers white, on long slender pedicels in terminal and axillary umbels rarely reduced to a solitary flower, with occasionally small leafy bracts at the base. Calyx inconspicuous, the lobes triangular-ovate; petals stellate-hairy outside with rufous hairs, induplicate-valvate in the bud; stamens 20-25, the filaments slender; carpels 2, erect, united to above the middle, obtuse, stellate-hairy. Fruit not seen.

Shrub 30-45cm. high. Leaves, together with their petioles 2-3cm. long, .8-1.2cm. wide, petioles 4-6mm. long. Pedicels up to 1.2cm. long. Petals 1cm. long, 4-5mm. wide. Stamens 6mm. long. Carpels 2.5mm. long.

Hab. Darling District, by the Helena River near Glen Forrest (Smith's Mill), in loamy soil in moist shady spots, fl. m. August. 3rd August, 1924. Gardner 819A. The Type.

This apparently localised species, with affinity to *A. pallida*, differs from the latter in the larger leaves and flowers, and in the more numerous stamens. From *A. grandiflora*, to which it is also closely allied, it differs in the axillary inflorescence, absence of coloured bracts, indumentum of the corolla which is white, not pink, and in the number of carpels.

The species is named in honour of Dr. Ludwig Diels, Director of the Botanic Gardens, Berlin, who has kindly expressed an opinion on several plants submitted from time to time.

RHAMNACEAE.

Siegfriedia, Gardn. gen. nov.

Flowers hermaphrodite; calyx-tube entirely adnate to the ovary, the limb divided into 5, rarely 4 lobes, persistent and erect, valvate in the bud. Petals 0. Stamens isomerous with the calyx-lobes and alternate with them, the filaments long and erect, conspicuously exerted; anthers ovoid-oblong; disc 0. Ovary inferior, 3-celled, with 1 erect ovule in each cell; style long and slender, shortly 3-branched at the apex. Fruit (not seen in a perfectly mature condition) a capsule slightly projecting beyond the tube of the calyx, the endocarp separating into 3 crustaceous cocci opening at the base of the inner angle in longitudinal slits; seeds erect, seated on a short thickened and fleshy turbinate or sub-cupular funicle.

Shrub; branchlets and under sides of the leaves invested with a pink or rufous close stellate tomentum. Leaves opposite, petiolate, entire, coriaceous, with revolute margins; stipules very deciduous. Flowers in cymes which are abbreviated into pseudo-heads, and hidden amongst ten or twelve large involucre-like decussate bracts, of which the two outermost are smaller than the others, the four outer bracts without flowers in their axils, but usually the four intermediate with small clusters of from 2 to 4 flowers, with sometimes the addition of a few sterile flowers. There is a central or apical cluster of flowers within the bracts of from 6 to 10 flowers which are shortly pedicellate. Flower-heads nodding; bracts coloured, coriaceous and serrulate.

The new genus, which belongs to the *Rhamnaceae*, has its closest affinity with *Pomaderris*, but differs from it in the practically sessile flowers which are quite glabrous, the long erect and exerted stamens, the absence of a disc, the opposite leaves and the large persistent involucreal bracts. These bracts give the plant the aspect of a bracteated *Darwinia*.

Siegfriedia darwinioides, Gardn. sp. nov. (*Siegfriedia darwinioides*, Gardn. Ms. in Enum. pl. Austr. occ. 76 (1931).

An erect shrub with a smooth purplish-brown bark, the branchlets canescent, the branches glabrous, erect. Leaves opposite, oblong, obtuse, the base somewhat cordate, the midrib impressed on the upper surface, the margins revolute, glabrous above and prominently reticulate, densely tomentose beneath with a bright pink tomentum which also invests the petioles of the younger leaves; stipules small and very deciduous. Inflorescence a cyme abbreviated into pseudo-heads terminating the short opposite lateral branchlets. Bracts usually 10-12 in number, all subequal, or the outermost two smaller, decussate, imbricate, orbicular, obtuse, irregularly serrulate, coriaceous, prominently nerved, red to pale pink or flesh-colour, 4-6 of the outermost being empty, the intermediate bracts often with a cluster of 3 or 4 flowers in their axils. Heads terminal within the involucre, the cluster consisting of from 6 to 10 flowers, and frequently some additional infertile flowers outside, and amongst the axillary clusters of the bracts. Calyx-tube glabrous, turbinate, 4-5-lobed, angled, the tube shorter than the lobes, the lobes valvate, ovate to ovate-lanceolate, acute, thick and coriaceous. Petals absent. Stamens exerted; filaments slender, inflected but ultimately erect; anthers versatile, 2-celled, the cells parallel; style as long as the stamens or nearly so, shortly 3-branched at the summit with 3 terminal stigmas; ovary inferior, 3-celled, ovules solitary in each cell, erect on a pulvinate funicle.

Starvation Boat Harbour, Mrs. Reynolds, August, 1925, per Mrs. Daw.
The Type.

Shrub probably 60-90cm. in height. Leaves 2-3cm. long, 7-8mm. wide in the larger leaves; petioles 7-9mm. long. Bracts 1.8cm. long, 1.7cm. broad; calyx 4-4.5mm. long, the lobes 2-2.5 mm. long, 1.5mm. broad. Stamens 6-7mm. long.

I am indebted to Mrs. E. Daw of Ravensthorpe for the material of this interesting plant.

VIOLACEAE.

Hybanthus bilobus, Gardn. sp. nov. (*H. bilobus*, Gardn. Ms. in Enum. pl. Austr. occ. 84 (1931).

A small shrub with diffuse branches, the bark pale and corky, the branchlets hirsute with short spreading hairs, and sometimes terminating in short spines. Leaves scattered, usually crowded in small clusters at the nodes, widely cuneate and truncate but appearing bilobed by reason of the recurved central portion of the apex, the margins revolute, hispid with short spreading hairs. Occasionally the leaf is shortly 2-lobed.

Peduncles solitary, axillary, 1-flowered, with a pair of small ovate-lanceolate concave and apiculate bracts near the middle, minutely hairy as well as the bracts. Sepals ovate, obtuse, 3-nerved, with a minute recurved mucro, the margins fimbriolate. Lateral petals equal in length to the sepals and similar in shape but more obtuse; upper petals very slightly shorter, mucronulate; lowest petal saccate at the base, with a short broad claw and broad lamina, not twice as long as the upper petals. Filaments much shorter than the anther, subequal, the anther-appendages orange-coloured, as long as the anther-cells, the two lower filaments with short processes at the base, \pm peltately attached.

Hamersley River, near the Eyre Range, in shady spots on the river banks; flowers white, blotched with pale lilac. 23rd September, 1925. Gardner 1886.

Shrub 30-60cm. high. Leaves 2-3mm. long, 2mm. wide at the apex; peduncles 3-4mm. long; sepals 2mm. long; lowest petal 4mm., including the short spur.

This species is close to *H. epacroides* (Gardn) Melchior, but the leaves are smaller and differently shaped, the sepals not hirsute, and the habit not erect, nor with divaricate, rigidly spinose branches.

MYRTACEAE.

Eucalyptus coronata, Gardn. sp. nov. (*E. coronata*, Gardn. Ms. in Enum. pl. Austr. occ. 87 (1931).

A "Mallee" or shrub of 2-6ft. in height, stems erect, rather widely branched. Leaves alternate, distinctly petiolate, oblong-lanceolate in outline, straight or somewhat falcate, acute or subacuminate, but occasionally

obtuse, thick, lustrous, the midrib rather prominent, the secondary nerves inconspicuous, spreading, anastomosing with an irregular intramarginal nerve distant from the leaf-margin.

Peduncles axillary or lateral, much flattened and undulate, \pm cuneate in outline, erect or sometimes recurved. Flowers sessile. Calyx-tube broadly turbinate, deeply corrugated; operculum conical, the base dilated and spreading, and the apex produced into a long straight beak, or the operculum shortly conical, usually wider than the calyx-tube, and like it deeply corrugated. Filaments yellow, erect in the bud, flexuose, angular and somewhat glandular; anthers oblong, opening in two longitudinal parallel slits, the connective gland dorsal. Disc prominent within the stamens, with 4 or 5 large wart-like protuberances alternating with as many smaller ones.

Fruit broadly turbinate, deeply corrugated, the rim prominent, the disc sunk below the rim but crowned in the centre by a verrucose raised boss on which are situated the slightly exerted deltoid valves, each of which has a large dorsal rounded and somewhat incurved protuberance, these alternating with smaller protuberances. Seeds large, black and angular.

Middle Mount Barren, in sandy soil among quartzite rocks on the summit, fl. m. September, 1926, Gardner 1914. Hills near East Mount Barren, H. Steedman—a form with large flowers and fruits, and an attenuated operculum. Whoogarup Range nr. Middle Mount Barren, 28th Nov. 1931. Gardner 2971.

This remarkable and handsome species belongs to the *Incrassatae*, Gardn., and has affinity to *E. goniantha*, *E. Kesselli*, and *E. megacarpa*. From *E. goniantha* it can readily be distinguished by the venation of the leaves, much larger and sessile calyx-tube, sculpture of the fruit, and apparently by the stamens also. It differs from *E. Kesselli* in the larger and differently-shaped fruit and operculum, and absence of pedicels. From *E. megacarpa* it differs in the corrugations of fruit, calyx and operculum, and from all of them in the curious warted appendages of the valves. *E. megacarpa* and *E. coronata* are the only two species of the genus which possess these peculiar incurved valves, but whereas in *E. megacarpa* it is the valves themselves which are incurved, in *E. coronata* the incurved process is really an appendage of the valve.

Eucalyptus Steedmanii, Gardn. sp. nov. (*E. Steedmanii*, Gardn. Ms. in Enum. pl. Austr. occ. 88 (1931).

A slender tree or Mallee attaining a height of 25 feet, the branches erect. Bark light brown, smooth and shining, decorticating in thin flakes, the timber dark brown. Branchlets angular.

Primary leaves narrow, but not seen in the very early stage. Leaves erect, oblong-lanceolate, usually obtuse, on short petioles, thick, lustrous, copiously oil-dotted, the midrib not prominent, the secondary nerves obscured but very oblique with the intramarginal nerve distant from the leaf-margin.

Peduncles axillary, elongated, dilated and ribbon-like towards the apex, erect or rarely deflexed. Pedicels long, 4-angled, widened into the calyx-tube. Calyx-tube quadrangular-obconical, the angles produced into 4 promi-

ment wings which are gradually widened from the angular pedicel being broadest at the calyx-rim. Operculum ovoid, acute, prominently 4-angled, the angles corresponding to the 4 wings of the calyx-tube, but not continuous with the wings of the calyx-tube. Filaments usually yellow, sometimes crimson, erect in the bud. Anthers oblong, opening in longitudinal slits; floral disc none.

Fruit turbinate-obpyramidal, truncate at the apex, prominently 4-winged, gradually tapering into the angular pedicel, the capsule deeply sunk, 4-5-celled, the valves subulate and exserted.

Shrub 5-7 metres high; leaves 4-7cm. long, 4-7mm. broad; petioles 3-6mm. long. Peduncles \pm 1.5cm. long, 3-4mm. broad at the apex; pedicels 1.5-1.7cm. long. Calyx 1.2cm. long (pedicel and calyx 3cm. long); calyx-tube 8-10mm. broad; operculum 1-1.2cm. long, 6-7mm. broad. Fruit (with pedicel) 3.5-3.7cm. long, 1.1-1.2cm. broad; valves exserted 4-5mm.

The species is related to *E. tetraptera* and to *E. Forrestiana*, having the same tetrapterous calyx. I have proposed a new series—*Tetrapterae*—for the reception of the three species, which differ from the other *Macrantherae* in this character of the four wings. *E. Steedmanii* differs from *E. tetraptera* in the umbellate inflorescence, the presence of well-defined pedicels, and the smaller and differently shaped leaves. *E. tetraptera* has also a differently shaped calyx-tube and operculum. From *E. Forrestiana*, to which it is more closely related, the new species differs again in the umbellate inflorescence and exserted valves. *E. Forrestiana* assumes a red colour in its buds and especially its fruits, and has a long rostrate operculum (Diels evidently described an aberrant form in this respect, or the beak, which is fragile, had become detached). The valves of *E. Forrestiana* are always deeply included, and the fruit narrowed towards the apex. The leaves of the two species are somewhat similar, but those of *E. Forrestiana* are lanceolate, not oblong, and the venation is much more distinct.

Coolgardie District:—Forrestania, South of Southern Cross, H. Steedman, Febry. 1928—The Type.

Near Forrestania, L. J. H. Teakle, tree of 25 feet. Nov. 1929.

Between Forrestania and Hatter's Hill, Gardner. Oct. 1929.

Eucalyptus angulosa, Schau, var. *robusta*, Gardn, n. var.

A shrub of about 6 feet; leaves up to 20cm. in length, very thick; calyx-tube prominently 3-4-angled, the angles sometimes extended into narrow wings; peduncles broadly flattened, recurved; filaments red. Fruit cylindrical-campanulate, 3-4-angled, 2.5cm. long, 1.8-2cm. wide at the top; valves well included.

Kundip, near Ravensthorpe, in gravelly sandy soil. H. Steedman, October, 1930.

This variety, which might even be regarded as a distinct species, has been included under *E. angulosa* because of its resemblance to this species. It has also some of the characteristics of *E. tetraptera*, but is never 4-winged, and the fruits are differently shaped.

It differs from *E. angulosa* (the typical form) in the broader and much thicker leaves, the angled campanulate calyx-tube, and in the colour of the filaments.

Eucalyptus sepulcralis, F.v.M. var. *robusta*, Gardn, n. var.

An erect bushy shrub of 8 to 10 feet in height with rigid angular branches, and rather broad erect leaves. Peduncles angular, slender, erect or spreading; fruits urceolate-globular, erect. Flowers with yellow filaments.

Mount Bland; H. Steedman, November, 1932.

This variety differs from the typical species in its Mallee form and erect rigid habit, otherwise it is much like the species, except that it is not pruinose on the buds, and the fruit is more robust, and scarcely contracted at the orifice. Both the buds and fruits are also larger.

Baeckea Baileyana, Gardn. sp. nov.

An erect shrub, probably tall, glabrous, with slender erect virgate branches and branchlets. Leaves opposite, appressed to the branchlets, linear-triquetrous, shortly but distinctly petiolate, glandular and somewhat keeled, the apex mucronately uncinata, the uppermost leaves shorter than the others. Peduncles erect, usually longer than the leaves, bearing usually 7 flowers on erect pedicels. Bracts lanceolate-acuminate, concave, deciduous. Bracteoles situated at the bases of the pedicels, lanceolate to oblanceolate or almost linear, acute, deciduous. Pedicels slender; calyx-tube widely turbinate, shortly 5-angled, the lobes ovate-orbicular with hyaline margins, each produced into a long horn-like point from near the centre of each lobe, proceeding distinctly from below the apex of the lobe, and exceeding it in length. Petals white, orbicular in outline, entire, almost twice as long as the calyx-lobe appendages. Stamens 10, short, regularly arranged; filaments slender, inflected, very deciduous, the cells deeply furrowed and opening in the furrows; connective not prominent. Ovary 2-celled, concave at the summit, with about 8 ovules in each cell on a peltate placenta. Style exceedingly short.

Shrub probably 2 metres in height. Leaves 5-8mm. long; peduncles 5-10mm. long; pedicels 2-4mm. Bracts 1.5-2mm. long; bracteoles 1.5mm. long. Calyx-lobes 1.5mm. long, the appendages 1.5-2mm. long; petals 3-4mm. diameter.

Habitat in the Avon district near Bruce Rock, in gravelly soils forming thickets. Eric T. Bailey, Oct. 1932. The Type.

The new species belongs to the Subgenus *Hysterobaeckea*, Niedenzu, Section *Oxymyrrhinae*, and has affinity to *B. Elderiana*, from which it differs in the appressed leaves which are only shortly uncinata, the 7-flowered inflorescences, the 2-celled ovary and the calyx-lobes, which are somewhat like those of *B. Elderiana*, except that the appendages which are much like what Pritzel terms the "lobes" of that species, are almost acicular, the lobed margins of the tube being developed as sepal-like organs with these processes distinctly dorsal.

Verticordia Mitchelliana, Gardn. sp. nov.

A shrub of 2-3ft., apparently erectly branched. Leaves linear, subterete, mucronate, crowded towards the apices of the branchlets. Flowers rather large, intense scarlet, solitary in the upper axils, forming dense leafy clusters towards the ends of the branches; pedicels slender. Calyx-tube with a ring of very short hairs at the base, otherwise glabrous, 5-ribbed,

cylindrical and narrow at the base, then abruptly widened in the free part and hemispherical, almost 5-lobed; primary lobes 5, deeply and irregularly divided into numerous cilia, and 5 accessory outer lobes similarly divided, reflexed on the tube and turned up from its base; petals ovate-oblong, sub-acute, lacerated irregularly at the apex, shortly adnate to the staminal tube. Stamens united in a short tube; filaments smooth, flattened and incurved; anthers ovoid-globular, opening in 2 small pores; staminodia almost twice as long, linear, acuminate, with a narrow-triangular base. Style straight, elongated and slender, bearded for some distance below the capitate stigma with rather long glandular hairs.

Shrub, less than a metre high; leaves 7-10mm. long; pedicels 6-8mm; flowers 1cm. in diameter; petals 5mm. long; filaments 2.5mm.; staminodia 4mm. long; style 2-3cm. long.

This species has affinity with *V. monadelpha* and *V. Pritzellii*. From the former it can be distinguished by the shape and size of the petals, the staminodia and style, and from *V. Pritzellii* by the shape of the petals which are lacerated-ciliate with long cilia, the eglandular staminodia, and exceptionally long style which is bearded all round for some distance.

Avon district, near Bencubbin, October, 1929, James Mitchell—The Type. Uberin Hill, Dowerin, C. A. Fauntleroy.

This handsome species is named in honour of Sir James Mitchell, K.C.M.G., late Premier of Western Australia, who collected this plant, and whose efforts in advancing settlement in the eastern areas have rendered possible a more detailed knowledge of the vegetation of a hitherto botanically little known region.

MYOPORACEAE.

Eremophila Muelleriana, Gardn. sp. nov. (*E. Muelleriana*, Gardn. MS. in Enum. pl. Austr. occ. 119 (1931)).

A shrub of 3-4 feet, with the habit of *E. eriocalyx*, the branches slender and marked with the cicatrices of fallen leaves, but the periodicity not well marked, the branchlets minutely hoary-tomentose. Leaves not dense, alternate, petiolate, obovate, flat, closely and densely tomentose with sulphur-coloured stellate hairs, very obtuse and rather thick but soft.

Flowers solitary in the axils of the upper leaves; pedicels straight, slender, loosely tomentose with long branched white hairs which invest the calyx also. Calyx divided to the base, the segments oblong-linear, obtuse, tomentose on both surfaces with loose-branched white hairs. Corolla almost campanulate with a short cylindrical base, then much dilated, the lobes short and broad, almost equal, the anterior lobe broader than the others and deeply lobed; throat bearded inside with long loose hairs, externally pubescent with short hairs. Stamens included in the tube, or scarcely exerted, \pm equal in length; anther-cells divergent, confluent at the summit. Ovary conical, glabrous, tapering into the style, the style slender, with a few spreading short simple hairs.

Leaves 1.3-1.5cm. long, 6-8mm. wide; petioles 2mm. long; pedicels \pm 1cm. long; calyx-lobes 1.3-1.4cm. long; corolla 2.5-2.7cm. long, lobes 8mm. long by 7mm. broad, the anterior much broader; ovary and style 2.5cm. long; stamens \pm 1.7cm. long.

Austin district, Roderick River near Kalli Station, west of Cue, G. Buchanan, September, 1927—The Type.

The species belongs to the Sect. *Eriocalyx*, and has affinity to both *E. compacta* and *E. eriocalyx*. It differs from *E. compacta* in the distinctly petiolate leaves which are much wider and not pustulate, the longer pedicels and curious loose vestiture of branched hairs, also the pubescent corolla. From *E. eriocalyx*, to which perhaps it is most closely allied, it differs in the smaller and differently shaped leaves and differently shaped corolla. The vestiture of the flowers is, however, like that of *E. eriocalyx*, and the calyx is of the same shape.

I have named this handsome plant, one of the most showy of the genus, conspicuous by reason of its deep red-violet flowers and yellow leaves, after Baron Ferdinand von Mueller, who did much to elucidate the species of this large genus in which he also commemorated the names of so many prominent Australian explorers during the early days of settlement, and who is also entitled to be numbered amongst them.

GOODENIACEAE.

Antherostylis,* Gardn. gen. nov.

Calyx divided to the base, free or adnate to the ovary at the base only, the sepals or segments 5, unequal, the anterior one longer than the others, and outermost in aestivation, the 4 lower segments \pm equal. Corolla oblique, the tube shortly adnate to the ovary at the base, gibbous on the lower side and produced into a hollow spur between the two lowest calyx-segments, split on the upper side almost to the base and deeply divided into 5 lobes, the two upper lobes not more deeply separated than the three lower, all equally winged, the three lower lobes oblong, straight, the two upper falcate and inflected over the tube. Anthers free. Ovary almost entirely free, shortly adnate to the corolla, imperfectly 2-celled, the dissepiment not extending beyond the middle; ovules indefinite, ascending. Style simple; indusium vertical, not cupular, appearing in the bud as four lateral vertical wings connected at the base and extending along each side of the style and continuous over the summit, free except at the base and forming two vertical hippocrepiform membranes which become laterally involute as the flower opens, resembling the two cells of a vertical adnate anther. Style a wide membrane extending throughout the entire length of the indusium between the two folds, continuous, and exerted (and apparently stigmatic also) only at the apex. Capsule superior, 2-valved, imperfectly 2-celled; seeds flat annular-winged.

Herb with the habit of *Goodenia pinnatifida*; leaves radical, toothed; stems bracteate; bracts opposite, foliaceous, peduncles long, erect; flowers yellow, solitary.

The genus has the general appearance of a *Goodenia*, with the floral structure of *Velleia* in which it might be included but for the remarkable indusium which is quite unlike anything known to me within the family. *Velleia* and *Goodenia* have both a distinctly cupular indusium, while the in-

* *ανθηρος* - *στυλος*—relating to the anther-like form of the style.

indusium of *Antherostylis* in appearance suggests a large central anther within the flower. This indusium is very wide and extends down the opposite sides of the style for some distance as two opposite and parallel wings which are continuous and free except at the base. This is well shown in the bud, but as the flower expands these lateral "wings" become involute, the outer lip or wing, being the larger, conceals the inner lip, imparting to the whole indusium the appearance of two longitudinal cells which are confluent at the apex. The stigma develops later as a continuous membrane traversing both "cells" in which it is enclosed, being shortly exerted only at the summit.

Leschenaultia has a bilabiate indusium, but this is semi-cupular and horizontal, not vertical.

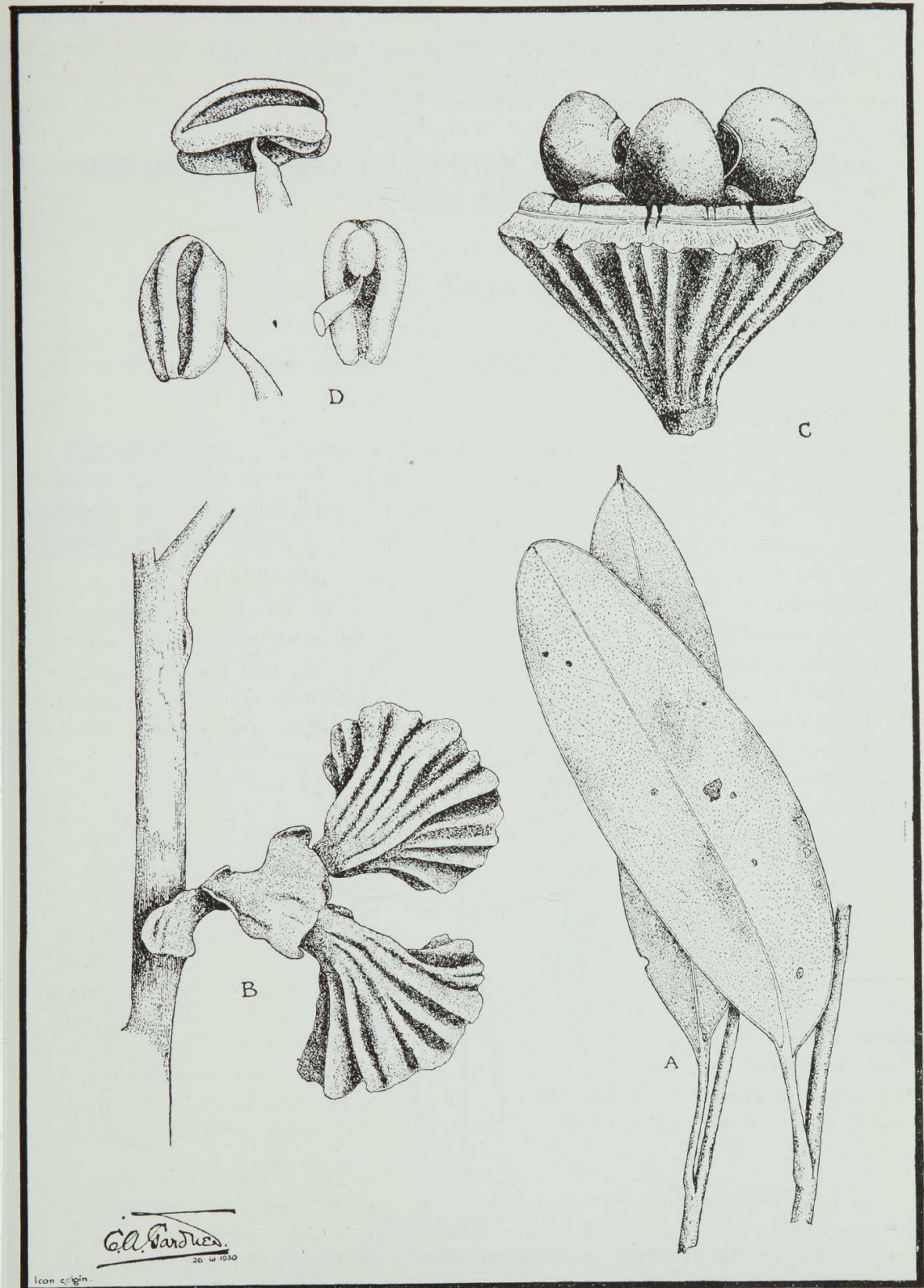
A. calcarata, Gardn. sp. nov.

Herb, apparently perennial, with tufted radical leaves and decumbent or ascending, rarely erect, stems. Leaves obovate-spathulate, mostly deeply toothed, or sometimes crenate, attenuated towards the base into a long petiole, glabrous except at the margins which are ciliate with fine short hairs, thick and \pm glaucous. Stems (scapes) slender, ascending or erect in the smaller plants, glabrous and striate, simple or trichotomous with opposite leaf-like bracts (stem-leaves) subtending the lateral branches. Bracts mostly lanceolate to oblong or obovate, with 1 or 2 linear lobes near the base, crenate or dentate in the upper part, ciliate. Pedicels long and slender. Bracteoles in pairs about the middle of the pedicel, shaped like the bracts and usually 2-toothed, ciliate with a few hairs. Calyx of free segments or sepals, the uppermost larger than the others, ovate-oblong, subacute, often crenate or slightly dentate, broad at the base and almost cordate, the margins somewhat recurved at the base, outermost in aestivation; lower sepals \pm equal, shorter than the upper and narrower, all ciliate with short hairs. Corolla yellow, the tube gibbous at the base, produced into a prominent hollow spur between the two lowest lobes; segments equally divided; the three lower oblong, straight, acute; the two upper falcate and inflected, all trinerved and equally winged, pubescent without, glabrous within; filaments flattened. Ovary ovoid, almost entirely superior, shortly pilose, style thick and straight, with short spreading hairs, adnate for nearly half its length to the indusium; indusium oblong in outline, pilose on the back of the subcoriaceous outer lip; the inner lip membranous and glabrous or almost so. Capsule ovoid, shortly and densely pilose; seeds densely packed, dark with a white hyaline circular wing.

Plant 10-20cm. high, spreading to 30cm. Leaves mostly 5-6cm. long up to 1cm. wide; pedicels 9-14cm. long; bracts 1-2cm. long; bracteoles 3-5mm. long. Upper sepal 1cm. long; lower 8mm. Corolla 2.0-2.2cm. long; indusium 6mm. long by 2mm. wide; capsule 8mm. long.

Hab. in Distr. Eyre, at Junanna Rocks, 15 miles N.W. of Mount Ragged, Russell Range, in grey kaolitic calcareous soil, in woodlands of *Eucalyptus occidentalis* and *Callitris verrucosa*, fl. m. Oct. 1931. Gardner 2909—The Type.

I collected this interesting plant in company with Dr. W. E. Blackall during an excursion to Israelite Bay in 1931.



EUCALYPTUS coronata, Gardn.

MIDDLE MT. BARREN: 23 Sept., 1926.

THE TYPE: Gardn. 1914.

A—Leaves, showing oblong form, obtuse and mucronate.
 B—Inflorescence, the stamens recently fallen. C—Fruit.
 D—Anthers.

PL. VIII.